SUPERFUND Proposed Plan

Palermo Wellfield

Tumwater, Washington

EPA U.S. ENVIRONMENTAL PROTECTION AGENCY AUGUST 1999

INTRODUCTION

This proposed plan identifies the United States Environmental Protection Agency's (EPA) recommendation for cleaning up soil, groundwater, surface water and indoor air contaminated with tetrachloroethene (PCE) and trichloroethene (TCE) at the Palermo Wellfield Superfund site in Tumwater, Washington. It is based on information collected in a Remedial Investigation (RI) and Feasibility Study (FS) conducted at the site.

The objectives of the RI and FS are to determine the extent of contamination at the site, and to evaluate alternatives to address threats or potential threats posed by the site. This plan will provide a brief background on the Palermo Wellfield site, describe the alternatives analyzed and identify EPA's preferred alternative.

This Proposed Plan, the RI/FS reports, as well as other pertinent documents are available in the Information Repository (see page 9). These documents could be consulted for in-depth details on the development and evaluation of EPA's recommendation and the other alternatives considered.

HOW YOU CAN PARTICIPATE

Public input on the alternatives and the information that supports these alternatives is an important contribution to the cleanup remedy selection process. Based on new information or public comment, EPA may select another alternative presented in this plan or modify the preferred alternative. The public is encouraged to review and comment on all technologies and alternatives considered for the site.

EPA will consider public comments received during the public comment period before choosing a final action for the site. The final action will be described in the Record of Decision (ROD), which will include EPA's response to comments. The ROD explains which cleanup alternative(s) is selected based on information generated during the RI/FS and public comment period.

SITE BACKGROUND

The Palermo Wellfield is located just east of Interstate 5 near the intersection of Trosper Road and Capitol Boulevard. It consists of six wells that provide up to 50% of the drinking water for the City of Tumwater. In 1993, routine sampling of the Palermo Wellfield detected the solvent TCE in three of the city wells. The City removed the three contaminated wells from service and replaced them with two new drinking water wells at another location. In March 1999, the three closed wells were put back into service after EPA completed construction of an air stripping system for removing contaminants from the wells. The City of Tumwater is now operating the treatment system.

The Superfund site includes the wellfield and the Palermo neighborhood, both located in the Deschutes River Valley, and the commercial area to the west, located near Capital Blvd. and Trosper Rd.

The Palermo Wellfield site was added to EPA's National Priorities List (NPL) of contaminated sites identified for potential long-term cleanup on April 1, 1997. Further investigations revealed the presence of TCE and PCE in soil and groundwater to the west of the wellfield. TCE is a solvent used primarily to degrease and clean metal parts. PCE is a solvent used in some dry cleaning operations.

The highest levels of TCE in groundwater were detected east of the commercial area in the residential Palermo Valley at the Rainier Avenue and "O" Street intersection. The highest levels of PCE in groundwater were detected below Southgate Mall Dry Cleaners.

PUBLIC COMMENT

EPA will accept written comments on the Proposed Plan during a public comment period from **August 6 to September 6,1999.**
Comments should be addressed to

Bob Kievit, Project Manager
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EPA will hold a public meeting to discuss all of the alternatives. Oral and written comments will also be accepted at the meeting.

DATE: **August 17, 1999**
TIME: **7:00 - 9:00 pm**
PLACE: **Tumwater City Hall**
Training Room
555 Israel Road SW
Tumwater, WA

Information collected during the RI indicates that PCE was found in a dry well at Southgate Dry Cleaners (See Figure 2) and that it sank through the soil to the groundwater below. From there it flowed with the groundwater to the base of the Palermo Bluff, near homes in the Palermo Valley. As this contaminated groundwater rose to the surface at the base of the Bluff, it collected in low areas and crawl spaces under the homes along Rainier Avenue.

TCE was also identified in groundwater at Southgate Dry Cleaners, suggesting the presence of two "plumes" of solvent. One shallow PCE plume comes from Southgate Dry Cleaners, and a deeper TCE plume comes from the Chevron Station and the Washington State Department of Transportation (WSDOT) Materials Testing Laboratory (MTL) located west of I-5. TCE was found in an underground tank at the WSDOT MTL, in soils and groundwater under the facility, and in soils and groundwater at the Chevron Station. Some TCE found near Southgate Mall also comes from the natural biological breakdown of PCE in the groundwater. A soil vapor extraction (SVE) system, a method to remove and clean vapor from contaminated soil, was put into operation at Southgate Dry Cleaners on March 24, 1998. As of March 1999, approximately 410 pounds of PCE have been removed from soils.

Figure 1. Site Location

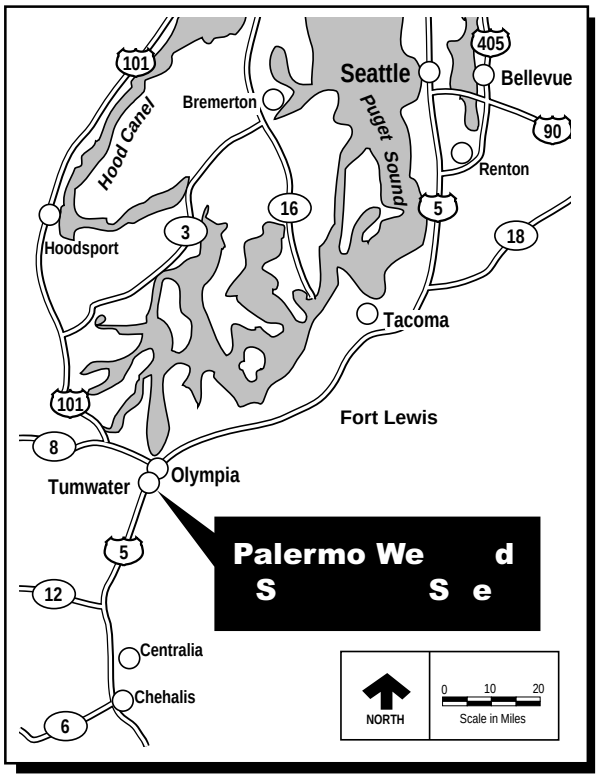
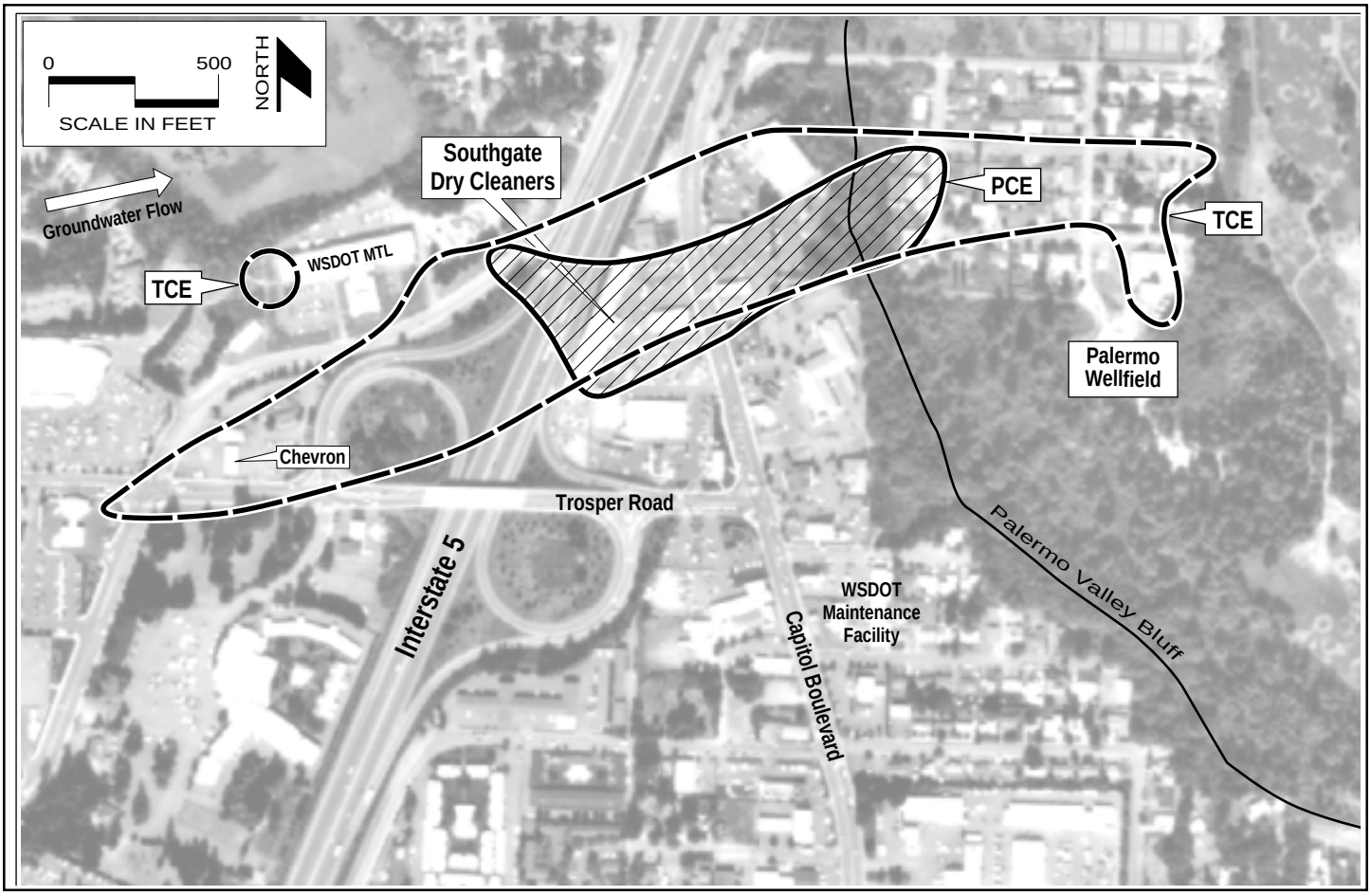


Figure 2. Approximate limits of groundwater PCE or TCE concentrations found at greater than the EPA standards used for protecting public health



Spills or disposal of TCE and PCE from one or more of these sources, dating from the mid-1960s, resulted in the contamination that affected the groundwater being drawn by the Palermo Wellfield. Both the TCE and PCE became thin zones of contamination moving underground toward the Palermo Valley. Contaminated groundwater has not been detected east of the Wellfield.

SUMMARY OF RISKS POSED BY THE SITE

What is "risk"?

The EPA's goal in any hazardous waste cleanup action is to protect human health and the environment.

In determining the risk of any contaminant to human or ecological health, the EPA has established a level to serve as a risk cutoff point. If a contaminant is present in concentrations above this level, current and future health of the person(s) exposed may be affected. Determining the "risk" often dictates the type and timing of a cleanup response.

Potential Risks to Human Health

PCE and TCE contaminant levels in soils, groundwater, surface water and indoor air were evaluated in both current and future risk scenarios. Findings showed that there no longer is any significant risk due to direct contact with the soil; however, contaminated soils under the Dry Cleaners are still leaching PCE into the groundwater at levels of concern. For that reason, the soil vapor extraction system continues to operate.

Drinking water: The current risk resulting from drinking groundwater from the public water supply is negligible because a wellhead treatment system has been installed to remove contaminants from the wells. In the future, however, if ***untreated*** groundwater uphill from the Wellfield is used as residential tap water, those residents may face an increased cancer risk of two in 10,000. This means that if 10,000 people used this groundwater for 30 years, two of them may develop cancer over their lifetime due to the TCE/PCE contamination.

Indoor Air: Additional studies indicate that a current health risk exists for Palermo Valley residents who may be breathing chemical vapors in their homes. Contaminated groundwater surfacing at the base of the bluff collects in the crawl spaces of homes along Rainier Avenue. Contaminants in this water could vaporize and enter the home via the crawl space. Residents along Rainier Avenue who breathe this indoor air concentration of PCE and TCE may face an increased cancer risk of six in 10,000.

Potential Risks to the Environment

No contaminants in the groundwater that would affect fish or other aquatic life, or in the surface water itself, were identified during the screening level ecological risk assessment.

CLEANUP OBJECTIVES

- ❑ Prevent ingestion of, and exposure to, groundwater having contaminants in excess of EPA and state health protective standards.
- ❑ Reduce the potential for chemical vapors from contaminated groundwater surfacing at the base of the Bluff to seep into the homes along Rainier Avenue.
- ❑ Reduce the potential for PCE and TCE to leach from contaminated soil into the groundwater, wherever practical.
- ❑ Prevent discharge of contaminated groundwater to surface water at concentrations that might be harmful to the ecology and human health.

CLEANUP ALTERNATIVES

GROUNDWATER

The alternatives developed and evaluated for **groundwater** include:

1. No action. (This no cost alternative is included as a basis of comparison in each instance.)
2. Preventing access to groundwater containing contaminants. This will be accomplished by continuing to use the air strippers to treat water at the Palermo Wellfield and by preventing the installation of new domestic wells in the contaminated plume until TCE and PCE levels meet drinking water standards. The contaminated plume will be monitored until clean up levels are met.

Alternatives 3 through 6 include all of the elements of Alternative 2 in addition to various options for cleaning up the groundwater between the sources of contamination and the wellfield.

3. Cleaning up contaminated groundwater under any or all of the Southgate Dry Cleaners, Chevron, and WSDOT locations—using microorganisms to break down the TCE and PCE into non-toxic compounds.

4. Treating contaminated groundwater at the base of the Palermo Bluff by air sparging. (Air sparging is injection of air into contaminated groundwater and then vacuuming the air, which has captured contaminants from the water, up to the ground surface where it is treated and discharged.)

5. Cleaning up contaminated groundwater under any or all of the Southgate Dry Cleaners, Chevron, and WSDOT locations—using air sparging.

6. Cleaning up contaminated groundwater under any or all of the Southgate Dry Cleaners, Chevron, and WSDOT locations—using a pump-and-treat system and discharging treated water to the storm drain system.

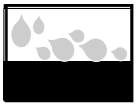
SOIL

The alternatives developed for **soil** under the Southgate Dry Cleaners include:

1. No action.

2. Shutdown of the Southgate Dry Cleaners soil vapor extraction (SVE) system, which has been in operation for approximately one year.

3. Continue use of the Southgate Dry Cleaners SVE system until the soils no longer leach PCE at levels of concern.



SURFACE WATER & INDOOR AIR

The alternatives developed for **surface water** and **indoor air** in the Palermo Valley include:

1. No action.

2. Treating the collected water inside the French drain by air sparging.

3. Treating the collected water by sparging in a lift station located at the northern end of Rainier Avenue.

4. Treating the collected water in an air stripper located at the northern end of Rainier Avenue.

5. Treating the collected water with carbon filters located at the northern end of Rainier Avenue.

6. Treating the collected water using a photo-oxidation unit located at the northern end of Rainier Avenue.

7. Planting trees (phtytoremediation) in the area of ponding, with supplementary lift station sparging to treat collected surface water.

8. Treating the collected water in an aerated lagoon at the eastern end of 'M' street on the municipal golf course.

9. Ventilating crawlspace to reduce the amount of contaminated surface water vapors coming into Rainier Avenue homes.

10. Combining alternatives 8 and 9 to provide lagoon aeration (with the French drain) and crawlspace ventilation.

Alternatives 2 through 8 and alternative 10, include installation of a French drain (an underground drainage ditch or pipe) to collect and reroute groundwater before it rises to the ground surface at the base of the bluff west of Rainier Avenue. The purpose of the French drain is to lower the water table below the bottom of the crawl spaces in the homes along Rainier Avenue. This will reduce the potential for TCE and PCE vapors to enter these homes. The French drain construction is used in each of alternatives 2 through 8 (see Figure 3) and in alternative 10. These alternatives vary in the way the collected water is treated.

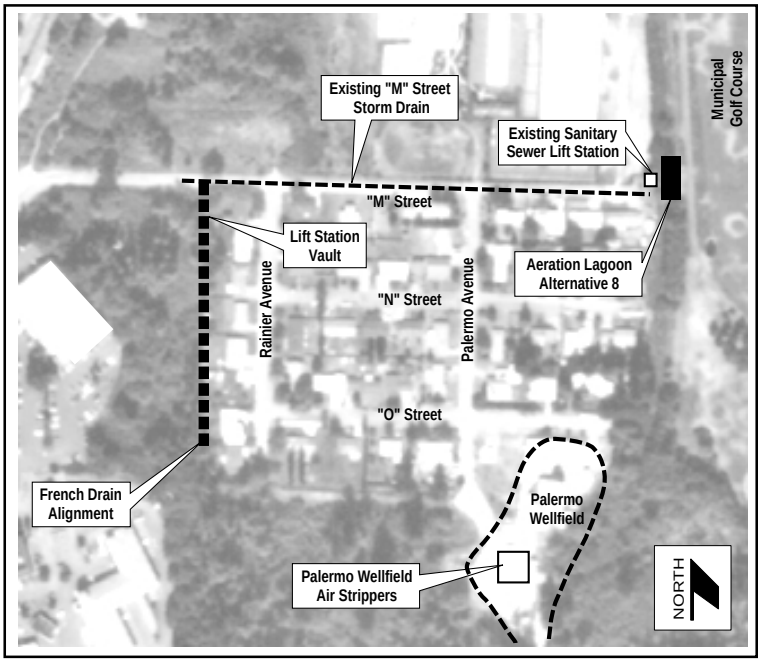


Figure 3. Location of treatment structures for preferred alternatives.

SUMMARY AND ANALYSIS OF ALTERNATIVES

The preferred alternatives for the Palermo Wellfield site were selected on the basis of the nine criteria listed on page 6. The nine criteria are divided into three categories: threshold, balancing, and modifying criteria. To be eligible for selection an alternative must meet the two threshold criteria (1 and 2 above). The five balancing criteria (3 through 7 above) weigh trade-offs among alternatives; a low rating on one balancing criterion can be compensated by a high rating on another.

Regarding criteria 8, the state indicates that they support the preferred alternative. Criteria 9, community approval, will be determined following the public comment period and public meeting.

GROUNDWATER ALTERNATIVES

1. Protection of Human Health and the Environment

Groundwater Alternatives 2 through 6 (excluding only the no-action alternative) all provide good overall protection of human health and the environment. All of these alternatives include the existing air stripping treatment system at the Palermo Wellfield to clean the well water. In the long run, this system is expected to pump up and clean almost all of the contaminated groundwater. The different approaches considered in Alternatives 2 through 6 mostly affect the length of time expected to be necessary for all of the contaminated groundwater in the area to be cleaned up, but they all offer equal protection in the long run. The estimated time to reach cleanup goals for groundwater using Alternative 2 is 5 to 20 years. Alternatives 3 through 6 would reach cleanup goals for groundwater a few years earlier. The alternatives that would do the most to speed the cleanup (such as Alternative 6) would do so at great cost compared to the additional amount of contaminant they would remove. Alternative 1 (no action) would not offer any protection of human health and the environment.

2. Compliance with ARARs

The main *applicable or relevant and appropriate requirements* that have been identified for the groundwater cleanup at the Palermo Wellfield site include the Safe Drinking Water Act (Federal MCLs) and the State of Washington Model Toxics Control Act (Method B). The chemical concentration limits set by these regulations will be met by the air stripping system that has been installed at the Palermo Wellfield. Groundwater that exceeds these limits will remain up hill from the Wellfield until it either moves to the Wellfield, is treated by some other process (various other processes are considered in Alternatives 3 through 6), or degrades naturally. Alternative 2 will eventually result in all of the groundwater in the area meeting the chemical concentration limits set by the regulations. Alternatives 3 through 6 would shorten the time required to meet these limits throughout the area. Alternative 1 (no action) would not meet the concentration limits, even at the Wellfield.

3. Long-Term Effectiveness and Permanence

All of the alternatives except for no action (alternative 1) would include permanent and active cleanup of well water at the Palermo Wellfield. Alternative 2 would require the longest time (of the alternatives that include some action) to clean up the groundwater up hill from the Wellfield. Alternatives 3 through 6 would speed the cleanup, but would rely on additional cleanup equipment that would need long-term maintenance.

4. Reduction of Toxicity, Mobility, and Volume of Contaminants

Alternative 4 is predicted to reach cleanup levels first, followed by alternatives 6, 5, 3, then 2. Alternative 2 would be the slowest of the action alternatives at reducing toxicity, mobility, and volume of the contaminants in groundwater. However, Alternative 2 would ultimately lead to the same reductions as the other action alternatives. Alternatives 3, 5, and 6, would provide treatment of contaminated groundwater in the areas where the TCE and PCE was originally released, thereby removing a contaminant before it can move very far. However, because of the age of the releases, the TCE in groundwater is no longer concentrated in these areas and the PCE in groundwater has shown improvement since the startup of the SVE treatment and is expected to continue to improve.

5. Short-Term Effectiveness

Construction of the Palermo Wellfield air stripping treatment system (which is part of all of the groundwater alternatives) caused some nuisance noise and inconvenience to the surrounding community, but was conducted safely and is now complete. Alternative 2 would have little additional impact on the community beyond that associated with occasional monitoring of wells throughout the area. Alternatives 3 through 6 all include additional treatment system construction activities that would pose some short-term risk and inconvenience to the community and the workers. These risks and inconveniences could be managed using normal construction-site practices.

The active treatment portions of alternatives 2, 4, 5, and 6 would become effective immediately after they were started up. The portions of Alternative 3 that would be applied in the upland areas would take several months to begin to be effective.

6. Implementability

All alternatives would use readily available technologies and would be feasible to construct. Alternative 2 would be the easiest to implement, because no additional construction tasks would be necessary. Alternatives 3 through 6 would need detailed designs prepared prior to implementation, and would involve additional construction tasks beyond the recently completed air stripping treatment system at the Palermo Wellfield. Implementation of these four alternatives would also require some small-scale testing before the full-scale treatment systems could be designed.

EPA CLEANUP CRITERIA FOR EVALUATION OF CLEANUP ALTERNATIVES

THRESHOLD CRITERIA:
Must be met by all alternatives.

1. Overall protection of human health and the environment evaluates how well an alternative eliminates, reduces or controls threats to public health and the environment.

2. Compliance with applicable or relevant and appropriate requirements (ARARs) evaluates whether the alternative meets state and federal environmental laws, regulations and other requirements that pertain to the cleanup alternative or, if not, whether a waiver is justified.

BALANCING CRITERIA:
Used to compare alternatives.

3. Long-term effectiveness and permanence considers the ability of an alternative to maintain protection of human health and the environment over time, and the reliability of such protection.

4. Reduction of toxicity, mobility, or volume evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of residual contamination remaining.

5. Short-term effectiveness considers how fast the alternative reaches the cleanup goal and the risks the alternative poses to workers, residents, and the environment during construction or implementation of the cleanup.

6. Implementability considers the technical and administrative feasibility of implementing the alternative, such as relative availability of goods and services. Also, it considers if the technology has been used successfully on other, similar sites.

7. Cost includes estimated capital and operation and maintenance costs, as well as present worth costs. Present- worth cost is the total cost of an alternative over time in terms of today's dollars.

MODIFYING CRITERIA:
Evaluated as a result of public comments.

8. State acceptance considers whether the state agrees with EPA's analyses and recommendations of the RI/FS and the Proposed Plan

9. Community acceptance will be addressed in the Record of Decision. The ROD will include a responsiveness summary that presents public comments and EPA's responses to those comments. Acceptance of the recommended alternative will be evaluated after the public comment period.

Table 1
Costs

Groundwater Alternatives	Capital Cost (to treat one source)	5-Yr O&M	Total Cost/Worth
1	$-0-	$-0-	$-0-
2	$3,980,000	$ 880,000	$4,860,000
3	$4,680,000	$3,610,000	$8,290,000
4	$4,210,000	$1,770,000	$5,980,000
5	$4,180,000	$1,700,000	$5,880,000
6	$4,150,000	$1,200,000	$5,350,000

Soil Alternatives	Capital Cost	5-Yr O&M	Total Cost/Worth
1	$-0-	$-0-	$-0-
2	$400,000	$100,000*	$500,000
3	$400,000	$433,000	$833,000

*1 year operation and maintenance (already incurred)

Surface Water/Indoor Air Alternatives	Capital Cost	5-Yr O&M	Total Cost/Worth
1	$-0-	$-0-	$-0-
2	$213,000	$306,000	$ 519,000
3	$208,000	$300,000	$ 508,000
4	$211,000	$294,000	$ 505,000
5	$200,000	$365,000	$ 565,000
6	$241,000	$475,000	$ 716,000
7	$736,000	$471,000	$1,207,000
8	$186,000	$283,000	$ 469,000
9	$135,000	$-0-	$ 135,000
10	$321,000	$283,000	$ 604,000

7. Costs

Costs for the alternatives have been estimated based on available information and experience on other cleanup projects. They are summarized for each alternative in Table 1. Alternative 2 is the least expensive alternative (aside from no action, which has no cost). Alternative 2 is also the least expense when compared to the other alternatives on a cost-per-pound of TCE/PCE removed basis. Alternative 3 is the most expensive option because of the high cost to operate the system. Alternative 4 is the next most expensive option because it assumes a moderate number of new wells, a single installation of equipment (at the base of the bluff rather than at several upland areas), and a moderate cost for treating vapors generated by the treatment process. Alternatives 5 and 6 are more expensive options, particularly if more than one subarea is selected for remedial action.

SOIL ALTERNATIVES

1. Protectiveness of Human Health and the Environment

Alternatives 2 and 3 offer similar levels of protection, because the majority of the soil contamination that the SVE system can remove from the area of Southgate Mall has been removed during the first year of operation. The no-action alternative would offer no protection.

2. Compliance with ARARs

The main *applicable or relevant and appropriate requirement* that has been identified for the soil cleanup at the Palermo Wellfield site is the State of Washington Model Toxics Control Act, Method B. The chemical concentration limits set by this regulation have nearly been met by operating the Southgate SVE system for one year (Soil Alternative 2). The chemical concentration limits will be met by continued operation of the SVE system (Alternative 3).

3. Long Term Effectiveness and Permanence

Both action alternatives would reduce PCE concentrations at Southgate Mall. Alternative 3 would be slightly more effective because it would remove more contaminant during its longer time of operation.

4. Reduction of Toxicity, Mobility, and Volume of Contaminants

Both alternatives would reduce the volume and mobility of contaminants in soil at Southgate Mall by removing PCE from soil. Most of this reduction has already occurred, during the first year of operation of the SVE system (Alternative 2). Continued operation of the system (Alternative 3) could recover another 10 to 100 pounds of PCE.

5. Short-Term Effectiveness

The SVE system is already installed at Southgate Mall, and continued operation will not have a significant impact on the community.

6. Implementability

The SVE system at Southgate Mall is already implemented, and has been operating for about a year.

7. Costs

Operating the SVE system at Southgate Mall for 1 year would be expected to incur about one-third the cost of operating the system for 5 years.

SURFACE WATER AND INDOOR AIR

1. Overall Protection of Human Health and the Environment

All of the surface water alternatives except Alternative 1 (no action) and Alternative 9 (crawlspace ventilation) offer good overall protection of human health and the environment. Alternatives 2 through 8 all collect shallow groundwater before it becomes surface water at the base of the bluff, and treat the water (see Figure 3.) Alternative 9 provides some protection, but, by itself, does not reduce health risk down to an acceptable level. The combination of Alternatives 8 and 9 offers the most overall protection.

2. Compliance with ARARs

The main *applicable or relevant and appropriate requirements* that have been identified for the surface water cleanup at the Palermo Wellfield site include the Clean Water Act (Federal Water Quality Criteria), the National Toxics Rule, State of Washington Surface Water Quality Standards, and the State of Washington Model Toxics Control Act (Method B). The treatment processes that are part of Surface Water Alternatives 2 through 8 would meet the chemical concentration limits set by these regulations. Alternatives 1 (no action) and 9 would not provide any treatment for the surface water, and so would not meet the chemical concentration limits.

3. Long-Term Effectiveness and Permanence

Surface Water Alternatives 2 through 8 would clean up the surface water that results from the seepage of shallow groundwater at the base of the Palermo Bluff. None of these Alternatives would clean up groundwater in the upland areas. Because of this, the collection and treatment processes in Alternatives 2 through 8 would have to be continued until the groundwater in the upland areas was cleaned up by an active groundwater cleanup alternative or by natural processes. Alternative 9 by itself would be marginally effective at reducing vapors from the crawlspaces of the homes, but would not clean up chemicals in the seeping groundwater. Alternative 1 (no action) would not be effective at removing chemicals from either crawlspace vapor or seeping groundwater.

4. Reduction of Toxicity, Mobility, and Volume of Contaminants

Alternatives 2 through 8 would reduce the volume of contaminants flowing into the Palmero neighborhood by capturing and treating contaminated shallow groundwater (and for

alternative 8, transporting it to the municipal golf course for treatment). The volume of contaminants in the collected surface water would be reduced by the treatment processes used in each alternative. Alternative 7 would, in addition, reduce the toxicity of some of the contaminants by changing them to harmless chemicals. Alternative 9 would reduce only the volume of contaminants by removing them from the crawlspaces of homes.

5. Short Term Effectiveness

Some short term nuisance noise and traffic inconvenience would result from construction of the French drain that is part of Alternatives 2 through 8. Construction of the treatment system portions of Alternatives 2 through 6 would add some additional construction effort in the same area as the French drain construction (west of the residences located along the west side of Rainier Avenue). All of the activities in this location would require careful attention to construction safety to protect workers in the wet, steeply sloped, and heavily vegetated area. Alternative 7 would result in additional impacts to the community because several acres of land would have to be purchased and cleared for tree planting. For Alternative 8, additional construction noise would be created at the east end of M Street. Operation of the lagoon would result in noise similar to a water fountain. For Alternative 9 (crawlspace ventilation), some short-term disruption would occur for residents during installation of the ventilation systems. A long-term small increase in electricity usage would also result, as well as some low nuisance noise.

Effectiveness of treatment technologies is easier to predict for vendor-supplied “off-the-shelf” technologies such as air strippers (Alternative 4), carbon filters (Alternative 5) and photo-oxidation (Alternative 6). The effectiveness of Alternatives 2, 3, and 8 is more difficult to predict because they do not use “off-the-shelf” treatment equipment. The effectiveness of phytoremediation (Alternative 7) would be the most difficult to predict.

6. Implementability

Installing ventilation fans in the crawlspaces of eight homes (Alternative 9) would be the easiest alternative to implement, even considering the difficulties of working in a flooded crawlspace. Alternative 8 requires the next least construction effort, because of the simplicity of the treatment equipment. Similar levels of construction effort would be required for Alternatives 3, 4, 5, and 6. Alternative 2 would be relatively more difficult to implement, and Alternative 7 would be the most difficult.

7. Costs

Costs for the alternatives have been estimated based on available information and experience on other cleanup projects. Of the surface water alternatives that include some action (all except Alternative 1) **and** that offer comprehensive protection, lagoon aeration (Alternative 8) represents the lowest cost. Crawlspace ventilation (Alternative 9) has a lower cost, but may not sufficiently reduce health risks and also does not address contaminants in surface water. The highest cost alternative is Alternative 7, phytoremediation.

EPA’s PROPOSED PLAN

EPA is proposing that the site-wide, comprehensive alternatives for cleaning up the Palermo Wellfield consist of the following: groundwater (alternative 2), soil (alternative 3), and surface water and indoor air quality (alternative 8). EPA believes the combination of these alternatives would best balance the nine criteria that EPA uses to evaluate alternatives.

The primary factors in favoring alternative 2 for groundwater include providing comparable protection to human health and the environment with less disruption to the local community and at a lower cost than alternatives 3, 4, 5, or 6. The primary factors in favoring alternative 3 for soil include the fact that the system has already been installed and is still removing appreciable amounts of PCE that would otherwise add to the groundwater problem. The primary factors in favoring alternative 8 for surface water and indoor air include providing comparable protection with less disruption to the Palermo neighborhood, and at a lower cost than alternatives 2 through 7 and alternative 10. Alternative 9 was not chosen, as it would not adequately lower the health risk to the residents of Rainier Avenue. The total cost for the proposed plan is estimated at $4,600,000 of which $4,400,000 has already been spent. The yearly operation and maintenance cost for the proposed plan is estimated at $370,000.

- ❑ The air stripping system at the Palermo Wellfield will continue to be operated with the wells pumped at normal capacity, to treat contaminated groundwater.
- ❑ Prevent the drilling of new drinking water wells within the contaminated area.
- ❑ The SVE soil cleanup system at Southgate Dry Cleaners will continue to operate until soil cleanup requirements are met.
- ❑ A French drain will be installed west of the residences located along the west side of Rainier Avenue, to collect groundwater seepage (surface water) at the base of the Palermo Bluff. The goal of the French drain is to lower the water levels so that water will not collect in the crawl spaces of the homes in the Palermo Valley. This groundwater will be routed to the golf course where it will be agitated by two surface aerators to remove the contaminants. This treatment structure would have the appearance of a vigorously bubbling pond with two fountains. Treated water would drain through the existing storm water ditch system, eventually discharging to the Deschutes River. Preliminary analysis indicates that air emissions from the lagoon will meet air emission standards.
- ❑ Contaminant concentrations in groundwater and surface water will be monitored, as will the effectiveness of the treatment equipment. Samples of indoor air will be analyzed to ascertain the effectiveness of the French drain.

WHO TO CONTACT FOR INFORMATION

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Phone: 360/753-9014

Debra Packard,
EPA Community Relations Coordinator
Phone: 206/553-0247

EPA's TOLL FREE NUMBER
1-800/424-4372

To ensure effective communications with everyone, arrangements for special assistance can be made by calling any of the above numbers.

INFORMATION REPOSITORY/ ADMINISTRATIVE RECORD FILE

Copies of the RI/FS and other documents pertinent to the Palermo Wellfield cleanup are available for your review at the following locations:

Tumwater Timberland Public Library
7023 New Market Street
Tumwater, Washington

Administrative Record File
Environmental Protection Agency
300 Desmond Dr. S.E.
Lacey, Washington 98503

USE THIS SPACE TO WRITE YOUR COMMENTS

Your opinions on the recommended plan for the Palermo Proposed Plan are important to EPA. Comments provided by the public are valuable in helping EPA select a final remedy for the site.

You may use the space below to write your comments, then fold and mail.
Comments must be postmarked by September 6,1999.

Name:_____

Address_____

City:_____

State:_____ Zip:_____

Palermo Proposed Plan
Public Comment Sheet

Place Stamp Here

Bob Kievit
Project Manager
EPA Region 10
300 Desmond Dr. SE
Lacey, WA 98503

U.S. ENVIRONMENTAL PROTECTION AGENCY AUGUST 1999

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Agency

EPA Region 10
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Lacey, WA 98503

PROPOSED PLAN
Palermo Wellfield
Tumwater, Washington